REMARKS

Amendments

Claims 1-6 are amended to use language in accordance with conventional US practice. In addition, the language used to describe the arrangement of the fluid connection is clarified. See, e.g., page 3, lines 1-8. These amendments do not narrow the scope of the claims.

New claims 7-21 are directed to further aspects of applicants' invention and are supported throughout the disclosure. See, e.g., page 3, lines 1-8, page 4, lines 5-12, page 5, lines 13-23, page 7, lines 10-34, page 8, lines 25-31, and the Figures.

Drawings

In response to the requirement for new drawings, applicants submit herewith replacement sheets of drawings. The lines in the replacement drawings are clear, i.e., not "rough" as is asserted with respect to the original drawings. Acceptance of the replacement drawings is respectfully requested.

Rejection of Claims 1-2 under 35 USC §103(a) in view of Allam et al. and Reavis et al.

Claims 1 and 2 are rejected as allegedly being obvious in view of Allam et al. (US 5,324,452) in combination with Reavis et al. (US 5,415,223). This rejection is respectfully traversed.

Allam et al. (US '452) discloses a process for reforming a hydrocarbon stream in the presence of steam to form a synthesis gas. Using a plate-fin heat exchanger, the hydrocarbon stream (optionally in combination with water) is heated by heat exchange with process streams (product synthesis gas and/or flue gas). The heated hydrocarbon stream is then optionally combined with steam, and reformed at elevated temperature to form the product synthesis gas. The synthesis gas is then cooled in the plate-fin heat exchanger by heat exchange with the hydrocarbon stream. See, e.g., column 2, lines 50-63 and column 3, lines 36-62.

The plate-fin heat exchanger of US '452 is illustrated in Figures 4 and 5. As can be seen in Figure 4, the heat exchanger is provided with several headers (412, 414, 416) arranged on

sides of the heat exchanger. Each of these headers has a supply conduit (422, 424, 418) which is arranged directly opposite inlets to heat exchange passages (436, 438, 434).

US '452 does not disclose or suggest a heat exchanger in which the fluid connections to headers are arranged in accordance with applicants' invention. The fluid connections for the headers of the plate-fin heat exchanger of US '452 are not arranged in a plane which lies essentially perpendicularly to the plane in which corresponding inlet or outlet orifices of heat exchange passages are located. Compare the arrangement of the fluid connections as illustrated in applicants' Figures.

Furthermore, as noted in the Office Action, US '452 fails to provide any suggestion of a routing means, within a header, for routing the flow of fluid supplied or discharged via a fluid connection.

Unlike the hydrocarbon reforming process of US '452, the disclosure of Reavis et al. (US '223) is directed to a the use of an evaporator in air conditioning systems. See, e.g., column lines 6-7. US '233 also note the difficulty in designing evaporators for specific air conditioning system. See, e.g., column 1, lines 13-20.

As shown in the Figures, the evaporator of US '233 evaporator has a plurality of heat exchanger elements 25, which are each generally tubular in shape. The evaporator at the bottom end has an outlet duct 32 which communicates with a tubular shaped fluid outlet fitting 37 that in turn communicates with a fluid outlet 38. At the top of the evaporator there is provided a plenum 40 which is in communication with a transition element 45 and fluid inlet 46.

Within the plenum 40 there is provided a spray bar 70 and baffling plate 60, both positioned above the inlets to the heat exchanger elements 25. As described at column 4, lines 42-55, the function or "goal" of the spray bar and baffling plate "are to achieve substantially equal distribution of the input fluid through each of the heat exchanger elements 25 and optimum exchange of heat."

It is clear that the plate-fin heat exchanger of US '452 and the evaporator of US '233 are designed for very different purpose, i.e., heating a hydrocarbon stream for use in a hydrocarbon reforming process versus cooling air in an air conditioning system. Nothing within the rejection suggests any motivation as to why one of ordinary skill in the art of hydrocarbon

reforming/synthesis gas production would look to the air of air conditioning art to modify a plate-fin heat exchanger. Merely because both arts involve heat exchange does not suggest motivation. These heat exchangers are specifically designed for particular uses, each use imposing their own difficulties on the design process.

In addition, as can be seen from a comparison of the Figures, the fluid inlet arrangement of US '233 is designed to distribute a relatively low-pressure liquid stream that is entering the plenum in a direction that is perpendicular to the direction of flow through the heat exchange elements. Thus, there is a need to evenly distribute fluid entering the plenum from a lateral inlet over the long flow path which covers the entire side of the evaporator. US '452 does not have this distribution problem, and thus there is no motivation to modify the exchanger of US '452 based on the evaporator of US '233.

The mere ability to modify a disclosure does not, in and of itself, establish obviousness. See, e.g., *In re Laskowski et al.,* 10 USPQ2d 1397 (Fed. Cir. 1989). Instead, there must be motivation shown that would lead one of ordinary skill in the art t make the asserted modification. No such motivation is demonstrated in the instant case.

Nothing within the disclosure of US '233 or US '452 would lead one of ordinary skill in the art to insert a baffle plate into the headers of the plate-fin heat exchanger of US '452, simply because such a baffle plate is used in the plenum of the air conditioning evaporator of US '233. Furthermore, there is not motivation shown that would lead one of ordinary skill in the art to modify the arrangement of the fluid conduits for the headers of the exchanger of US '452 in such a manner as to be arranged in a plane that lies essentially perpendicularly to the plane in which corresponding inlet or outlet orifices of heat exchange passages are located.

In view of the above remarks, it is respectfully submitted that Allam et al. (US '452), taken alone or in combination with Reavis et al. (US '233), fail to render obvious applicants' claimed invention. Withdrawal of the rejection under 35 USC §103(a) is respectfully requested.

Rejection of Claims 3-6 under 35 USC §103(a) in view of Allam et al., Reavis et al., and Yamaguchi et al.

Claims 3-6 are rejected as allegedly being obvious in view of Allam et al. (US 5,324,452), Reavis et al. (US 5,415,223), and Yamaguchi et al. (US 5,690,166). This rejection is also respectfully traversed.

US '166 discloses an evaporator for use in automotive air conditioning. As shown in Figures 1-4, the evaporator has an upper header 11, a lower header 12, and a plurality of heat exchange tubes 13 communicating between the two headers. The upper header 11 is divided into four sections by plates 15 and 16. Similarly, the lower heard 12 is divided into four sections by plates 17 and 18.

Air flows between the tubes 13 as shown by arrows A in Figure 4. Refrigerant flows through the header sections and within the tubes in the manner shown by line D in Figure 4. Due to the position of the plates in the two headers, there are two regions in the evaporator in which there are no tubes. These are shown as spaces 200 and 300 in Figure 2. See column 4, lines 37-44. As a result, a portion of the air flowing between the tubes flows straight through space 200, as shown by arrow C in Figure 2, which reduces efficiency.

To address this problem, a U-shaped blocking member 41 member is positioned in space 200 thereby blocking the flow of air through the space. See, e.g., column 5, line 61-column 6, line 20.

Thus, contrary to the assertion in the rejection, US '166 does not disclose a plurality of heat exchange blocks. It discloses one heat exchange block in which a blocking member is positioned in a region where no heat exchange tubes are present to thereby increase efficiency.

The blocking member of US '166 provides no suggestion of modifying the plate-fin heat exchanger of US '452 so as to provide a plurality of heat exchange blocks. The space between adjacent heat exchange blocks would not have a fluid flowing through it for purposes of heat exchange. Thus, there would be no need to use a blocking element such as disclosed by US '166.

Furthermore, the disclosure of US '166 provides no suggestion that would lead one of ordinary skill in the art to insert a routing means within the headers of the plate-fin heat

exchanger of US '452, or modify the arrangement of the fluid conduits for the headers of the exchanger of US '452 in such a manner as to be arranged in a plane that lies essentially perpendicularly to the plane in which corresponding inlet or outlet orifices of heat exchange passages are located.

In view of the above remarks, it is respectfully submitted that Allam et al. (US '452), taken alone or in combination with Yamaguchi et al. (US '166) and/or Reavis et al. (US '233), fail to render obvious applicants' claimed invention. Withdrawal of the rejection under 35 USC §103(a) is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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